CLAIMS

1. A zoom lens comprising, in the following order from an object side:

a first lens unit that has a positive refractive power as a whole and that is fixed with respect to an image plane;

a second lens unit that has a negative refractive power as a whole and that causes a variable power action when moved along an optical axis;

an aperture stop that is fixed with respect to the image plane;

a third lens unit that has a positive refractive power as a whole and that is fixed with respect to the optical axis direction when zooming and when focusing;

a fourth lens unit that has a negative refractive power as a whole and that is fixed with respect to the image plane; and

a fifth lens unit that has a positive refractive power as a whole and that is movable along the optical axis such that the image plane, which is displaced by a movement of the second lens unit along the optical axis and by a movement of the object, is maintained at a constant position from a reference plane,

wherein the entire third lens unit is movable in a direction perpendicular to the optical axis in order to stabilize an image, and

the following condition is satisfied

$$0.035 < |\beta w \cdot \beta t / Z| < 0.075 \quad (1)$$

βw: magnification ratio of the second lens unit at the wide-angle end

βt: magnification ratio of the second lens unit at the telephoto end

Z: zoom ratio.

2. The zoom lens according to claim 1, wherein the fifth lens unit is moved to the object side as the object point approaches, and the following condition is satisfied

$$0 < (d45T - d45N) / (IM \cdot Z) < 0.04 \quad (2)$$

d45T: interval between the fourth lens unit and the fifth lens unit in a telephoto position

d45N: interval between the fourth lens unit and the fifth lens unit when the second lens unit is in an equal magnification position

IM: image size

Z: zoom ratio.

3. The zoom lens according to claim 1 or 2, wherein the fourth lens unit satisfies the following condition when the second lens unit is at an equal

magnification position or at the telephoto end

$$Mt < 1.1 \quad (3)$$

Mt: amount by which the fourth lens unit is moved when the second lens unit is moved by 0.1 mm in a telephoto position.

4. The zoom lens according to any one of claims 1 to 3, wherein the second lens unit satisfies the following condition

$$0.4 < |\beta t / \sqrt{Z}| < 0.9 \quad (4).$$

5. The zoom lens according to any one of claims 1 to 4, wherein the first lens unit is made of four lenses including, arranged in the following order from an object side, a lens with negative refractive power, a lens with positive refractive power, a lens with positive refractive power, and a lens with positive refractive power.

6. The zoom lens according to any one of claims 1 to 5, wherein an incidence angle and an exit angle of the lens closest to the object side satisfy the following condition

$$1.7 < \omega 1o / \omega 1p < 2.2 \quad (5)$$

$\omega 1o$: incidence angle on the lens closest to the object side

$\omega 1p$: exit angle from the lens closest to the object side.

7. The zoom lens according to any one of claims 1 to 6, wherein radii of the curvature of the object side surfaces and the image side surfaces of the first lens unit satisfy the following condition

$$-0.1 < ri1 / ri2 < 0.45 \quad (6)$$

ri1: radius of curvature of the object side surface of the i-th single lens of the first lens unit counting from the object side

ri2: radius of curvature of the image side surface of the i-th single lens of the first lens unit counting from the object side.

8. The zoom lens according to any one of claims 1 to 7, wherein the second lens unit comprises at least three concave lenses and one convex lens.

9. The zoom lens according to any one of claims 1 to 8, wherein the third lens unit comprises at least one convex lens and one concave lens.

10. The zoom lens according to any one of claims 1 to 9, wherein the fourth lens unit comprises at least one convex lens and one concave lens.

11. The zoom lens according to any one of claims 1 to 10, wherein the fifth lens unit comprises at least two convex lenses and at least one concave lens.

12. The zoom lens according to any one of claims 1 to 11, wherein the second lens unit comprises at least one aspherical surface.

13. The zoom lens according to any one of claims 1 to 12, wherein the third lens unit comprises at least one aspherical surface.

14. The zoom lens according to any one of claims 1 to 13, wherein the fourth lens unit comprises at least one aspherical surface.

15. The zoom lens according to any one of claims 1 to 14, wherein the second to fifth lens units comprise at least one lens having the same sag amount on both sides.

16. The zoom lens according to any one of claims 1 to 15, comprising at least one aspherical surface whose sag amount on both sides is the same.

17. The zoom lens according to any one of claims 1 to 16, wherein all of the aspherical surfaces are such that the sag amount on both sides is the same.

18. A video camera comprising a zoom lens according to any one of claims 1 to 17 and an image-pickup element for photoelectrically converting light that has passed through the zoom lens.